Article original / Original article

Revue Méditerranéenne d'Odonto - Stomatologie

Clinical profile and oral manifestations of the sicca syndrome: A cross-sectional study

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Abstract

Background: The sicca syndrome often causes significant functional discomfort which leads the patient to consult. It is manifested through a set of symptoms and clinical manifestations resulting from a decrease in secretions of exocrine glands, especially salivary and lachrymal ones. It is considered to be the first sign of Sjogren's syndrome, a systemic auto-immune disease that may be primary, i.e., isolated, or secondary, i.e., associated with another autoimmune disease. Due to the complexity of its diagnosis and the risk of developing lymphoma, Gougerot-Sjogren's syndrome has a considerable therapeutic difficulty. Sicca syndrome can also occur outside the Sjogren's syndrome.

The aim behind our work is to study the epidemiological, clinical, therapeutic, and evolutionary characteristics of this pathology through a series of cases and to compare them with those in literature.

Methods: It is a retrospective study over 8 years (from 2012 to 2019) of 40 sialadenitis cases collected at the dental department.

Results: For the 40 cases studied, the sex ratio was 3/1 and the average age was 65 years. The most common reason for consultation was dry mouth Sjogren's syndrome was diagnosed in 35% of the cases. Biopsy of accessory salivary glands was the key complementary examination. A variety of associated pathologies and medical treatments were noted. The treatment consisted mainly in the oral cavity management and xerostomia treatment. A strong interdisciplinary collaboration was implemented. Malignant transformation was not reported for any patient.

Conclusions: This study has focused on the diagnostic approach when suspecting Sjogren's syndrome, which contributes to improving this disease understanding for a better management.

Keywords: Autoimmune diseases, Keratoconjunctivitis sicca, Salivary gland diseases, Sicca syndrome, Sjogren syndrome, Xerostomia

Introduction

Sicca syndrome is a glandular manifestation characterized by reduced exocrine gland secretion, mainly affecting the salivary and lacrimal glands. It is most commonly associated with Gougerot–Sjögren syndrome (GSS), a chronic systemic autoimmune disease. Given the increasing prevalence of this condition and the heterogeneity of diagnostic criteria, a better understanding of GSS has become necessary [40].

As with most autoimmune diseases, the etiology of GSS remains unclear. Its pathophysiology is multifactorial, involving genetic predisposition, lymphoplasmacytic infiltration, epithelial dysfunction, autoantibody production, and viral agents [39]. GSS exhibits a broad clinical spectrum, ranging from isolated glandular involvement responsible for sicca syndrome to systemic extraglandular manifestations affecting multiple organs [46]. Although functional impairment is common, disease severity is mainly related to visceral involvement.

Two forms of GSS are recognized [30]: primary and secondary. Sicca syndrome, characteristic of both forms, may remain clinically silent for long periods and is often revealed by extraglandular manifestations. It may also occur independently of GSS, particularly in the context of aging, polypharmacy, or hepatitis C virus infection [30].

This study aims to highlight sicca syndrome in a Tunisian population sample and to emphasize the role of the dental practitioner at different stages of the disease.

Materials and Methods

Study design

This cross-sectional study aimed to analyze clinical, therapeutic, and outcome-related data, as well as histopathological findings, from a series of 40 cases of sialadenitis observed over an eight-year period at the Department of Dental Medicine, Sousse.

Male and female patients of all ages were included. These patients presented with oral and/or ocular dryness and were referred for minor salivary gland biopsy for suspected sicca syndrome, or for the investigation of amyloid deposits in cases of suspected sarcoidosis revealing secondary sialadenitis. Patients consulting or referred for oral cavity rehabilitation in whom sicca syndrome was discovered incidentally were also included.

Patients in whom sicca syndrome was clinically suspected but no paraclinical investigations were performed were excluded from the study.

Data collection and analysis

Surgical records containing histopathological findings and final diagnoses, together with clinical observation forms, constituted the primary sources of information for all patients diagnosed with sialadenitis.

Patient data were collected using a standardized data collection form specifically designed for this study. The collected data were subsequently processed and analyzed using Microsoft Office Excel 2019® under the Windows 11® operating system.

Ethical considerations

The collection and analysis of sociodemographic and clinical data were conducted in accordance with the principles of medical ethics. Patient anonymity and confidentiality of personal data were strictly respected.

Results

Epidemiological data

The study included 40 patients. The most affected age group was 60–70 years (50%), followed by 50–60 years (25%). There was a marked female predominance, with 31 women and 9 men. Most patients originated from the Sousse governorate, while residential data were missing in 25% of cases.

Reasons for consultation and clinical presentation

The majority of patients (80%) were referred by other medical departments or dental practitioners, whereas 20% consulted spontaneously. The time interval between symptom onset and consultation was undocumented in 85% of cases; however, 10% of patients sought consultation within four months of symptom onset.

Ocular symptoms were reported by 11 patients, predominantly ocular dryness (n = 9) and a foreign-body sensation (n = 2). None of these patients had used tear substitutes prior to consultation. Additional ocular complaints included blurred vision, ocular pain, conjunctival pallor, and conjunctivitis.

More than half of the patients reported oral symptoms, all of which corresponded to xerostomia. Salivary gland swelling and the need for liquid assistance during swallowing were each reported by two patients. Dental complaints mainly consisted of dental pain and tooth mobility. Sicca syndrome was incidentally discovered during dental care in 20% of cases, most often following the identification of oral mucosal lesions, hyposalivation, or abnormal salivary flow. Table I summarizes the different clinical presentations of the study population.

Table I: Reasons for consultation and clinical presentation of patients

	Variable	n (%)
Mode of consultation	Referred by another department or practitioner	32 (80.0)
	Self-referred	8 (20.0)
Time to consultation after symptom onset	< 4 months	4 (10.0)
	Not documented	34 (85.0)
Ocular manifestations	Any ocular symptom	11 (27.5)
	Ocular dryness	9 (22.5)
	Foreign-body sensation (“sand” sensation)	2 (5.0)
	Use of tear substitutes prior to consultation	0 (0)
Oral manifestations	Any oral symptom	>50%
	Xerostomia	All symptomatic patients
	Salivary gland swelling	2 (5.0)
	Need for liquid assistance during swallowing	2 (5.0)
	Dysgeusia / feeding difficulty	Reported
	No oral symptoms	3 (7.5)
	Not documented	14 (35.0)
Dental manifestations	Dental pain	Frequent
	Tooth mobility	Frequent
Incidental diagnosis during dental care	Sicca syndrome incidentally discovered	8 (20.0)
	Oral mucosal lesions	6 (75.0)
	Xerostomia	4 (50.0)
	Abnormal salivary flow	1 (12.5)

Medical history and associated conditions

Medical history data were incomplete. Only one patient reported a hereditary condition, and no alcohol or tobacco use was documented. Most patients (75%) were receiving long-term medications, mainly antihypertensive agents, oral antidiabetic drugs, antiacids, and anti-inflammatory medications.

Associated systemic diseases were present in 90% of patients. Joint involvement was the most frequent manifestation (19.4%), followed by renal involvement (27.7%), predominantly chronic renal failure. Pulmonary, neurological, and hematological/vascular disorders were less frequently observed. Oral lichen planus was identified in 10 patients and histopathologically confirmed, with predominantly oral involvement. Seven patients had associated autoimmune diseases, mainly rheumatoid arthritis, followed by systemic lupus erythematosus, pemphigus, and hypothyroidism. (Figure 1)

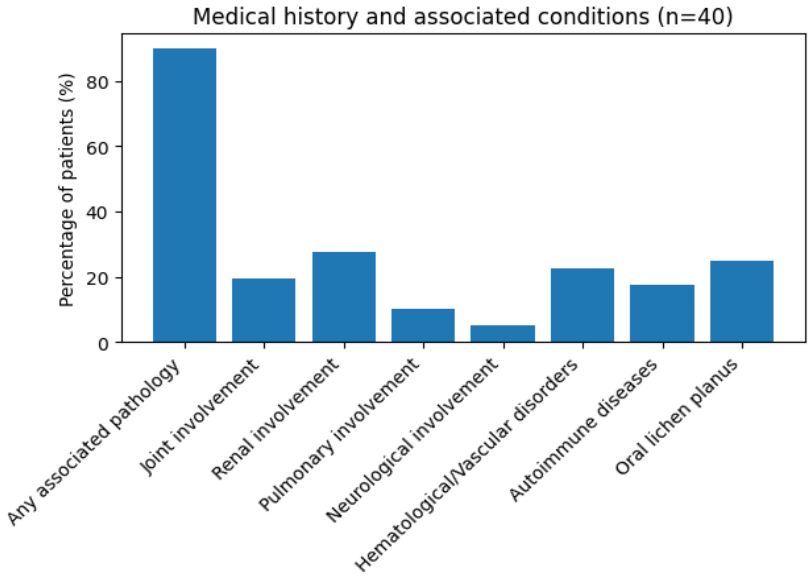

Figure 1. Medical history and associated conditions in patients with sicca syndrome (n = 40).

Clinical examination findings

Extraoral examination was unremarkable in most patients, with asthenia reported in only 7.5% of cases. Salivary gland swelling was clinically detected in three patients. Intraoral examination revealed poor oral hygiene in 77.5% of cases and incomplete dentition in 82.5%. Oral mucosal lesions were observed in all examined patients, most commonly consistent with oral candidiasis. Tongue involvement was documented in half of these cases. (Table II)

Table II: Clinical examination findings in patients with sicca syndrome

Clinical findings		n (%)
Extraoral examination	Asthenia	3 (7.5)
	No asthenia	27 (67.5)
	Not documented	10 (25.0)
	Salivary gland swelling	3 (7.5)
	Cutaneous manifestations	7 (17.5)
	Other extraoral manifestations*	11 (27.5)
Intraoral examination	Poor oral hygiene	31 (77.5)
	Incomplete dentition	33 (82.5)
	Dental pain / mobility	22 (55.0)
	Prosthetic rehabilitation	13 (32.5)
Oral mucosal involvement	Presence of mucosal lesions	30 (75.0)
	Candidiasis-like lesions	Predominant
	Tongue involvement	15 (37.5)
Salivary glands (endo-oral)	Examination not documented	31 (77.5)
	Abnormal salivary flow	2 (5.0)
	Minor salivary gland hypertrophy or atrophy	Reported

***Cellulitis-related swelling, temporomandibular joint disorders, digital deformities, arthralgia, dry lips.**

Complementary investigations

Ophthalmological assessment was performed in 12 patients. The Schirmer test was positive (<5 mm/5 min) in the two patients tested. Ocular staining tests were not performed, and Van Bijsterveld scores were unavailable.

All patients underwent salivary gland evaluation. The sugar cube test was positive (>3 min dissolution) in 90% of tested patients. Sialometry, performed in five patients, showed reduced unstimulated salivary flow in 80% of cases. Minor salivary gland biopsy was systematically performed, with most results demonstrating chronic sialadenitis grade 1 according to the Chisholm and Masson classification. Salivary gland imaging was performed only rarely. (Figure 2).

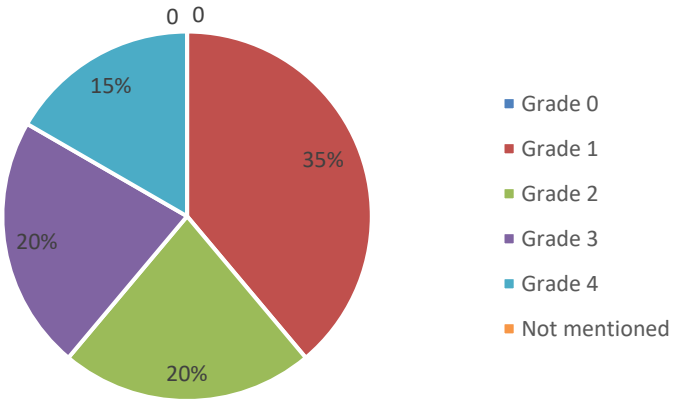

Figure 2. Chisholm and Masson classification of the study group

Laboratory investigations were incomplete and available for 32.5% of patients. Autoantibodies were detected in a minority of cases, including rheumatoid factor and anti-SSA/SSB antibodies. Elevated erythrocyte sedimentation rate was noted in five patients.

Management and outcomes

Most patients (92.5%) received treatment, with oral rehabilitation performed in 92% of cases. Non-pharmacological interventions were the most common, focusing on oral hygiene motivation and the use of adapted mouthwashes. Symptomatic treatments included saliva substitutes for all patients and pilocarpine in one case. Ocular lubricants were prescribed to four patients. Systemic therapies were limited and mainly indicated for associated autoimmune or mucocutaneous diseases.

Follow-up data were available for 18 patients. Disease progression was unfavorable in 55.5%, with either worsening oral symptoms or the emergence of extraglandular manifestations. No

malignant transformations were observed. Multidisciplinary collaboration was required in most cases, particularly with ophthalmology, nephrology, rheumatology, and internal medicine departments.

Based on clinical, histopathological, and complementary findings, 14 patients were diagnosed with Gougerot–Sjögren syndrome, including 11 with primary and 3 with secondary forms (Figure 3).

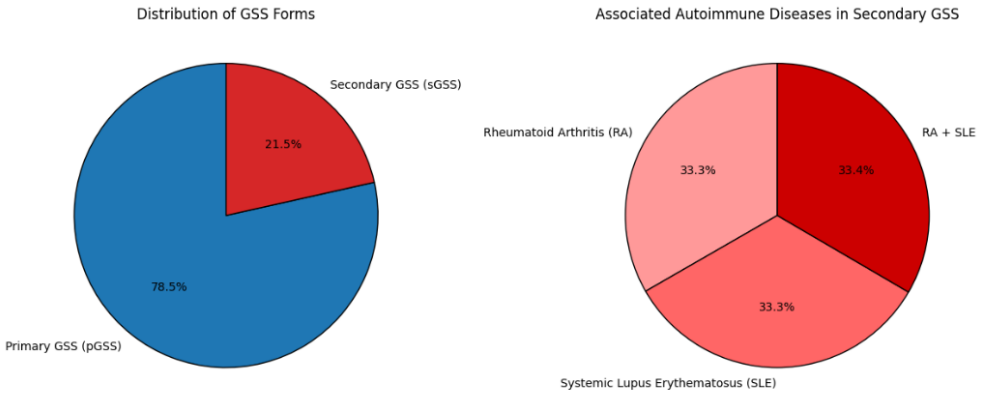

Figure 3. Distribution of GSS forms (left) and associated autoimmune diseases in patients with secondary GSS (right).

The disease predominantly affected women, with a mean age of 60 years in primary GSS and 55 years in secondary GSS. (Table III)

Table III. Distribution of GSS patients by sex and age group

		pGSS	sGSS
Sex	Female	9	3
	Male	2	0
Age group	40-50 years	0	1
	50-60 years	1	1
	60-70 years	8	1
	>70 years	2	0

Discussion

Epidemiology

The epidemiology of Sjögren's syndrome (SS) remains poorly defined due to heterogeneous studies providing only partial estimates. The reported incidence is approximately 6.92 cases per 100,000 inhabitants per year [39,2]. In the general population, primary SS (pSS) prevalence ranges from 0.01% to 0.7%, reflecting differences in study populations, classification criteria, and assessment of glandular dysfunction [2,11,53]. In our series, pSS accounted for 27.5% of cases, while secondary SS (sSS), mainly associated with systemic autoimmune diseases such as rheumatoid arthritis, systemic lupus erythematosus, and systemic sclerosis, represented 7.5% [37,40]. SS shows worldwide distribution with significant geographic and ethnic variability, although data from Africa remain scarce [39]. The syndrome predominantly affects older individuals and demonstrates strong female predominance; in our cohort, the mean age was 60 years with a female-to-male ratio of 3:1, consistent with previous reports [19,25,37].

Systemic and Extra-Glandular Involvement

Extra-glandular manifestations occur in up to 70–80% of patients and may precede sicca symptoms, supporting SS as a systemic autoimmune disease [1,17]. In our series, musculoskeletal involvement was most frequent, although less prevalent than in large cohorts, while renal involvement was more common, likely reflecting the small sample size. Pulmonary and hematological abnormalities were observed at lower rates than reported in literature [20,30,33,42]. Associations with other autoimmune diseases, particularly rheumatoid arthritis and systemic lupus erythematosus, were frequent, reinforcing the concept of polyautoimmunity and the need for long-term multidisciplinary follow-up [37,43].

Oral and Cutaneous Manifestations

Fatigue, a hallmark symptom of SS, was underreported in our cohort despite high prevalence in the literature (33–90%) [1,8,20]. Cutaneous manifestations, including purpura, erythema, Raynaud phenomenon, and xeroderma, were rare, likely reflecting underrecognition in dental practice [13,18,52]. Salivary gland swelling, reported in 30–50% of SS patients [1,31,42], was observed in only one patient. Oral involvement was prominent, with poor oral hygiene, dental caries, tooth loss, and mucosal lesions—mainly candidiasis—consistent with literature reports [14,32,38,46]. Periodontal disease was present in over one third of patients, influenced by age, smoking, and hygiene rather than SS alone [3,14]. Lingual manifestations, including atrophic or depapillated tongue, were rare compared with reported rates of 40–50% [24,34].

Diagnostic Approach

Objective confirmation of sicca syndrome was inconsistently performed. Schirmer tests, ocular staining, and TBUT were performed in few patients despite established diagnostic utility [1,27,31]. Salivary functional tests, such as sialometry, were underutilized, while labial salivary gland biopsy, performed in all patients, showed lower positivity than literature reports (52–86%) [15,52], likely due to sampling variability, disease stage, or non-specific sialadenitis [1,29]. Salivary gland imaging and laboratory investigations were also infrequent, with ANA positivity lower than expected, while anti-SSA, anti-SSB, and RF frequencies were comparable to previous reports [2,53]. These findings underscore the need for a systematic, multidisciplinary diagnostic approach integrating clinical evaluation, immunological testing, glandular assessment, and imaging [1,31,46].

Therapeutics

Management of SS remains challenging due to the absence of targeted therapy and standardized guidelines [14,46,51]. Treatment is individualized according to disease activity and extra-glandular involvement. Multidisciplinary care—including immunology, rheumatology, ophthalmology, and dentistry—is essential. In our cohort, 85% underwent oral cavity preparation, emphasizing assessment of oral health, caries risk, and mucosal lesions [32]. Preventive measures, including oral hygiene education and gustatory stimulation, were applied in 21 patients, whereas dietary and lifestyle counseling was generally lacking [14,32,46].

Systemic therapy was limited: five patients received treatment beyond oral care, including NSAIDs, hydroxychloroquine, and methotrexate [14,51]. Corticosteroids were used mainly for oral mucosal involvement. Local management of xerostomia relied on saliva substitutes, with one patient receiving pilocarpine [14,46]. Ocular dryness was treated with artificial tears in four patients, though literature suggests cyclosporine drops or scleral lenses may further improve quality of life [14,32,46].

Follow-Up and Prognosis

Follow-up was performed in 18 patients every 1–4 months. Persistent oral symptoms were common, reflecting delayed diagnosis or suboptimal therapy. Ophthalmologic evaluation was performed in 30% of patients [46]. No malignant transformations were observed, though 30% were lost to follow-up. Vigilance is needed due to increased lymphoma risk, with predictive markers including hypocomplementemia, cryoglobulinemia, palpable purpura, recurrent salivary swelling, lymphopenia, and anti-SSA/SSB or RF positivity [14]. Prognosis is generally favorable, with mortality primarily associated with severe extra-glandular complications [14,45].

Role of the Dentist

The dentist plays a central role in SS, including early recognition of xerostomia and oral lesions, diagnostic confirmation via sialometry, minor salivary gland biopsy, and autoantibody testing, as well as oral rehabilitation, patient education, and psychological support. Dentists also facilitate multidisciplinary care, as reflected in our study, involving ophthalmology (30%), internal medicine (27.5%), and rheumatology (7.5%).

Study Limitations

Limitations include incomplete records, limited clinical and paraclinical investigations, infrequent salivary gland imaging, and a high proportion of patients lost to follow-up, highlighting the need for standardized data collection to optimize diagnostic and therapeutic strategies.

Conclusion

Sjögren's syndrome is a systemic autoimmune disease characterized by sicca symptoms, with diagnosis relying on established clinical and laboratory criteria. Early detection is important to limit complications, while multidisciplinary management improves outcomes. Dentists have a key role in recognizing oral manifestations, providing preventive care, and guiding patient follow-up. Our study confirms known patterns of female predominance, age, and clinical features, but highlights the need for standardized diagnostic tests and closer interdisciplinary collaboration to optimize patient care and quality of life.

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